GAU, Faculty of Engineering

Course Unit Title	Fundamentals of Electrical Engineering
Course Unit Code	ENG201
Type of Course Unit	Compulsory, All engineering students
Level of Course Unit	2nd Year BSc
National Credits	3
Number of ECTS Credits Allocated	6 ECTS
Theoretical (hour/week)	2
Practice (hour/week)	-
Laboratory (hour/week)	2
Year of Study	2
Semester when the course unit is delivered	3
Mode of Delivery	Face to Face, Laboratory Experiments, E-learning activities
Language of Instruction	English
Prerequisities and co-requisities	-
Recommended Optional Programme Components	Basic bacground Physics and Linear Algebra

Objectives of the Course:

- Conceptial overview of law and methods in engineering
- Teaching Methods of Circuit theory.
- Teaching Power in circuits
- Capacitance and inductors, First order circuits

Learning Outcomes

When this course has been completed the student should be able to		Assesment.
1	Analyze simple resistive circuits	1
2	Apply the fundamental methods of Circuit theory on DC circuits	1
3	Analyze first order circuits	1
4	Calculate the load resistor for simple circuit to satisfy the maximum power transfer theory	1
5	Conduct experiments and interpret obtained data	3,5

Assesment Methods: 1. Written Exam, 2. Assignment 3. Project/Report, 4.Presentation, 5 Lab. Work

Course's Contribution to Program

		CL
1	Ability to understand and apply knowledge of mathematics, science, and engineering	4
2	Ability to design and conduct experiments as well as to analyze and interpret data	5
3	Ability to work in multidisciplinary teams while exhibiting professional responsibility and ethical conduct	2
4	Ability to apply systems thinking in problem solving and system design	4
5	Knowledge of contemporary issues while continuing to engage in lifelong learning	
6	Ability to use the techniques, skills and modern engineering tools necessary for engineering practice	3
7	Ability to express their ideas and findings, in written and oral form	4
8	Ability to design and integrate systems, components or processes to meet desired needs within realistic constraints	1
9	Ability to approach engineering problems and effects of their possible solutions within a well structured, ethically responsible and professional manner	3

CL: Contribution Level (1: Very Low, 2: Low, 3: Moderate 4: High, 5:Very High)

Course Contents

Week			Exams
1		Introduction	
2	Chapter 1	Circuit Variables	
3	Chapter 2	Circuit Elements	
4	Chapter 3	Simple Resistive Circuits	
5	Chapter 4	Techniques of Circuit Analysis	E-Quiz 1
6		Node-voltage Method	E-Quiz 2
7		Mesh-Current Method	E-Quiz 3
8			Midterm
9		Source Transforms	
10		Thevenin and Norton Equivalents	E-Quiz 4
11		Maximum Power Transfer	E-Quiz 5
12	Chapter 6	Inductance and Capacitance	Quiz
13	Chapter 7	Response of First order RL and RC Circuits	E-Quiz 6
14			Lab. Exam
15			Final

Recommended Sources

Textbook: Electric Circuits, James W. Nilsson and Susan A. Riedel, Addison Wesley Publishing Company, (8th Edition 2008) (Other editions are also useful)

Supplementary Material (s): Fundamentals of Electric Circuits, C.K. Alexander & M. N. O. Sadiku, McGraw-Hill, 2001

Assessment

Attendance& E-learning	10%	
Laboratory	10%	Lab Grade= (Lab exam grade×Lab Attendance)
Midterm Exam (Written)	25%	
Quiz (Written)	15%	
Final Exam (Written)	40%	
Total	100%	

ECTS Allocated Based on the Student Workload

Activities	Number	Duration (hour)	Total Workload(hour)
Course duration in class (including the Exam week)	15	2	30
Labs and Tutorials	8	2	16
Assignments	-	-	-
Project/Presentation/Report Writing	8	2	16
E-learning Activities	12	4	48
Quizzes	1	6	6
Midterm Examination	1	12	12
Final Examination	1	12	12
Self Study	14	2	28
Total Workload			168
Total Workload/30 (h)			5.60
ECTS Credit of the Course			6